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ANTENNA APPARATUS AND TRANSMITTER/RECEIVER

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BACKGROUND OF THE INVENTION

1. Field Of The Invention

The present invention relates to an antenna apparatus that is suitable for use in scanning with high-frequency electromagnetic waves (high-frequency signals), such as micro waves and millimeter waves, over a predetermined angular range, and a transmitter/receiver, such as a radar and a communication apparatus, including such an antenna apparatus.

2. Description of the Related Art

In general, various kinds of beam-scanning antenna apparatuses used for an on-vehicle radar, for example, are known. For example, a first conventional technique involves the use of a reciprocal first dielectric line and a second fixed dielectric line which constitute a directional coupler, and the first dielectric line has a primary radiator connected to move with the reciprocal first dielectric line (Japanese Unexamined Patent Application Publication No. 2001-217634, for example).

Also, a second conventional technique involves the use of a reflection plate for reflecting a beam radiated from the primary radiator, which reflection plate is rotated in accordance with the beam scanning angle using a rotation mechanism, and an antenna transmitter/receiver including the primary radiator is capable of beam scanning using a cam mechanism or a link mechanism (Japanese